CORD
Geometry (Third Edition), Geometry

Degree of Evidence regarding the Standards for Mathematical Practice:

Minimal Evidence

Summary of evidence:

1. **Make sense of problems and persevere in solving them**. There are some opportunities for students to explain in the Think and Discuss sections at the beginning of the practice problems, but they can be easily skipped, because they are not built in throughout the text. There is a formulated 4-step problem-solving plan that students are directed to use (e.g. pp. 30, 100, 173, 244,…, 606). In the chapters reviewed, there are very limited open-ended questions. In the Critical Thinking Sections, students are led to the desired results (e.g. p. 611). In the chapters reviewed, there is no opportunity for reflection on answers inherent in the student resource or mentioned in the teacher resource. In using the student resource, students are presented with the concept they should have "discovered" on the same page as the steps in their discovery (e.g. p.596 with the lateral area of a right prism). There are infrequent and limited open-ended problem-solving opportunities for students to tackle on their own. Most problems guide students in reaching the desired results. In the chapters reviewed, there is very limited opportunity for students to create a problem-solving plan and follow through or determine reasonableness. Motivation for students to discover the concepts on their own is limited, because the desired outcome or formula is presented on the same page as the activity they are to conduct.
2. **Reason abstractly and quantitatively**. In the chapters reviewed, there are limited application problems ingrained in the unit. An entire application section is included at the end of each chapter, resulting in possible omission. If the teacher incorporates the application problems within each lesson, rather than leaving the problems until the end of the chapter, then the possibility for meeting this Core Standard increases. Occasionally, students are asked to create a model for an application. The majority of the time students are presented with a model already created and asked to answer questions based on it (e.g. p.595 activity). The teacher resource occasionally mentions "encouraging" students to work with a model on their own time. There is little connection between applications and representations using symbols. Often, symbols just appear in formulas (e.g. p. 407). Most questions are solved by applying an algorithm which the students have not generalized or formed on their own.
3. **Construct viable arguments and critique the reasoning of others**. In the chapters reviewed, there are very limited opportunities for students to explain their reasoning. Problems are focused only on arriving at a numerical answer. There are "critical thinking" areas in each lesson, and these areas occasionally have students justify their thinking. Students are asked to explain at times in the Think and Discuss section. In the chapters reviewed, there was little mention of students sharing their methods with the class. The teacher would have to set up the activity to include group work and class discussion, since it is not inherent in the text. The Math Labs at the end of each unit do include instructions for the teacher to place students in groups of 2 to 3 but do not suggest the sharing of results. Explanations and discussion of justification are very limited in the chapters reviewed. Overall, there are limited opportunities for students to justify their thinking, and when they do exist, they may be skipped due to infrequency or the fact that they are not in the practice exercises. Opportunities will rely on teacher facilitation of the activities.
4. **Model with mathematics**. In the chapters reviewed, there are some applications where students are asked to create mathematical models (e.g. p.610 activity). In the application questions, answers are in context. There is no explicit connection among tables, graphs, equations, and

situations in the chapters reviewed. Students have some opportunity to work with tables and equations in the Math Labs, but these activities could be skipped, because they are at the end of the chapter and not ingrained in the text (e.g. p.494). There is an entire section of math applications at the end of each chapter. Students may have limited opportunities to work these problems if the teacher elects to skip the Math Application section. Overall, there are some opportunities for students to create mathematical models, but these opportunities depend on teacher implementation and the incorporation of the Math Labs and Math Applications sections at the end of each chapter.

5. **Use appropriate tools strategically.** Geometric constructions are presented as a separate section that could easily be skipped. Constructions are presented as a way to begin with a particular type of figure (like an isosceles triangle in Activity 1 on p. 189), but then students use other methods to determine properties. Constructions are also present in some of the Math Labs at the end of each chapter (e.g. p.195). Students are asked to use rulers, protractors, and patty paper to help them in the exploration of some concepts. There is limited reference to the use of graphing calculators. Students are directed to use a calculator for trigonometry (e.g. p.289). The use of technology, specifically the Math Labs at the end of each chapter, is discussed. There is at least one lab for each chapter which incorporates the opportunity to use a Geometry computer program. Overall, technology use is inherent in a Math Lab at the end of each chapter. Geometric constructions do not seem to be within any practice problems aside from the section specifically on constructions or within some section activities. In the chapters reviewed, there is little evidence of evaluating the strength and weaknesses of tools.
6. **Attend to precision.** Examples use proper notation and are precise. In the chapters reviewed, examples of precise communication are not present. Students are given some opportunities to share and discuss their responses, but this is only mentioned in the teacher resource (e.g. p.310). There is attention to precision in the examples but no discussion for students to tackle. The fostering precise communication would rely on teacher facilitation of student activities.
7. **Look for and make use of structure**. In the chapters reviewed, there are some opportunities for students to look at examples and then generalize (e.g. p. 210). Often, the rule is given and then examples follow (e.g. pp. 304, 596). Some activities explore patterns to create generalizations. Most of the time, students form generalizations by completing the Math Labs at the end of each chapter. These opportunities could be easily overlooked or skipped altogether. There is limited to no connection to prior learning. There are some opportunities for students to generalize their thoughts in the Think and Discuss sections, but this is primarily only after the text has told them the algorithm or rule without any discovery.
8. **Look for and express regularity in repeated reasoning.** In the chapters reviewed, students are rarely asked to look at patterns (aside from the Math Labs). The activities in each section lead students to the desired generalizations without any exploration on their own. There are some opportunities for students to generalize a pattern to determine a rule. Opportunities are more present in the Math Labs at the end of each chapter, which will depend on the teacher incorporating these labs in to the course.